

24th International Conference on Subterranean Biology

Ana Sofia P. S. Reboleira¹, Fernando J.M. Gonçalves²

1 *Natural History Museum of Denmark, Universitetsparken 15, DK-2100 København Ø, Denmark* **2** *Department of Biology and CESAM, University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal*

Corresponding author: *Ana Sofia P. S. Reboleira* (sreboleira@snm.ku.dk)

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The 24th biennial Conference on Subterranean Biology was held on the campus of the University of Aveiro in Portugal from 20th to 24th August, following the previous conference held in USA (Culver 2016). The conferences are organized under the auspices of the International Society for Subterranean Biology, founded in 1979. It was the first meeting held in Portugal and in the Iberian Peninsula.

The conference had 110 registered participants, representing 25 countries, from all continents of the planet. The most represented nation was the United States of America with 18 participants, followed by Portugal with 17, and by Australia (13), Spain (8), Germany (8), Slovenia (7), Italy (7), Brazil (6), France (5), Denmark (3), Switzerland (2), Slovakia (2), Greece (2), United Kingdom (2), Netherlands (1), Poland (1), South Africa (1), Philippines (1), Romania (1), China (1), Cambodia (1), Croatia (1), Pakistan (1), Algeria (1), and Bulgaria (1). The age difference among participants ranged more than 68 years. During the registration period, more than 60 participants joined the International Society for Subterranean Biology as new members, which demonstrates the scientific impact of the conference and the pivotal role of the society.

This conference hosted, for the first time, pre-conference workshops with a total of five, comprising 21 hours of *in situ* work: 1) Trait-based analyses in groundwater ecology

and bioassessment; 2) Governance of subterranean ecosystems – legal approaches & instruments; 3) Genomics of cave invertebrates; 4) Riverbed colmation, its effects on stream ecology and restauration and the legal background; and 5) Guidelines on Laboratory Practices with subterranean fauna. This initiative was highly appreciated, raising high interest among the conference participants and abroad.

Three official meetings were hosted by the conference: the first meeting of members of the Cave Invertebrate Specialist Group of the International Union for Conservation of Nature (IUCN), three sessions of the meeting of the council of the International Society for Subterranean Biology and its General Assembly.

The scientific program was divided into 14 sessions, with 71 oral presentations and 34 posters presentations. It offered a wide range of topics focused on the research in subterranean ecosystems.

The Linnean approach to the study of subterranean organisms always plays an important role on the documentation of biodiversity and several presentations dealt with the discovery of new *taxa* for Science. The molecular approach to the evolutionary history of subterranean *taxa* was well represented among the conference presentations, pointing out remarkable radiations and adaptations to the life in the underground. Great focus was also made on the delimitation of species and hybridization phenomena in the underground.

Out of the organismic perspective, a significant part of the presentations focused on understanding the ecosystem dynamics, drivers of speciation and biodiversity patterns in the underground at regional and macroecological scales.

Finally, the study of the impacts of human activities on subterranean ecosystems in the Anthropocene, became an urgent and visible topic of research. This is particularly relevant because subterranean ecosystems play a vital role on the groundwater quality, and its biological compartment is neglected from legislation worldwide. Predicting the future of subterranean biodiversity is particularly relevant for understanding the fate of the subterranean ecosystems, and to establish protective measures. The development of ecological risk assessment, predictive models to understand the effects of climate change, and the inclusion of subterranean-adapted species on the IUCN Red List were among the proposed measures for assessing a more realistic conservation scenario for subterranean ecosystems.

The scientific committee voted for the best student presentations, which were awarded in the conference banquet on August 24th. The winner of the best oral presentation was the student Ceth Parker with a presentation about a novel mechanism of microbial driven cave formation, and Stefano Mammola won the best poster prize.

Following the tendency of the digital era, this conference was broadcast in social media and national television (RTP 2018; SIC Notícias 2018).

For the first time this conference has its abstracts available online in open access with DOI in semantic HTML, XML and PDF formats (Reboleira and Gonçalves 2018). The videos of the oral presentations and the posters are associated with each abstract, converting it into a fully open access conference, launching the first number of the ARPHA Conference Abstracts, a novel, open access platform, readable by humans and machines. The volume can be found at: <https://aca.pensoft.net/collection/109>.

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